

REMARKS

Claims 24, 26, 29-41, 43, 45, and 47-57 are pending in the present application. Claims 29 and 52-57 are allowed. Claims 24 and 45 were amended in this Response. No new matter was introduced as a result of the amendment. Claims 24, 26, 30-36, 39, 41, 43, 45 and 47-51 were rejected under 35 U.S.C. §112, first paragraph for containing subject matter that was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor, at the time the application was filed, had possession of the claimed invention. Specifically, the Examiner suggested that the specification did not teach the feature of “selectively setting/adjusting wavelength”. The Applicant respectfully traverses the rejection.

In light of the current amendments to claims 24 and 45, the claims are definitively disclosed in the specification. Specifically, page 10, line 5 recited “a pump signal PS of constant wavelength λ_{L1} ,” and the power level of the pump laser is further adjusted (see page 11, lines 9-10: “readjusts the power of the pump oscillator”). Accordingly, it is submitted that the rejection under 35 U.S.C. §112, paragraph 1, is overcome and should be withdrawn.

Claims 24-26, 30-31, 33-36, 39, 41, 43, 45 and 47-50 were rejected under 35 U.S.C. §103(a) as being anticipated by *Yamane et al.* (U.S. Patent No. 5,764,404) in view of *Inagaki et al.* (U.S. Patent 5,745,283). Claim 32 was rejected under 35 U.S.C. §103(a) as being anticipated by *Yamane et al.* (U.S. Patent No. 5,764,404) in view of *Inagaki et al.* (U.S. Patent 5,745,283) and further in view of *Onaka et al.* (U.S. Patent 6,067,187). Claim 51 was rejected under 35 U.S.C. §103(a) as being anticipated by *Yamane et al.* (U.S. Patent No. 5,764,404) in view of *Inagaki et al.* (U.S. Patent 5,745,283) and further in view of *Chikuma et al.* (U.S. Patent 6,055,093). The Applicants respectfully traverse these rejections for the following reasons.

With respect to independent claim 24, the Office Action asserts that *Yamane et al.* discloses the elements recited in this claim. The Applicant respectfully disagrees and submits that claim 24 is not taught or suggested by the prior art of record. In particular, *Yamane et al.* does not teach the feature of “injecting at least one pump signal and at least one further pump signal into the optical conductor . . . when at least one pump signal having a wavelength less than a minimum wavelength of each of the plurality of transmission bands and the at least one further pump signal having a wavelength that is greater than a maximum wavelength of each of plurality of transmission bands” as recited in claim 24, and similarly recited in claim 45.

Furthermore, *Yamane* fails to disclose "selectively setting at a power level for a chosen wavelength of at least one of the at least one pump signal and the at least one further pump signal such that the tilting of a transmission band in which signal levels do not change remains at least substantially constant at a receiving end of the optical conductor" as recited in claim 24 and similarly recited in claim 45.

In addition to the arguments submitted previously by the Applicant, the claims refer to an inline control of power levels of an optical transmission line, whereas *Yamane* refer only to the control of an optical amplifier. The effect of the present claims is that a Raman induced tilt, which is a nonlinear effect occurring during the transmission of optical signals, is eliminated by using one or two pump signals with controllable pump powers at given wavelengths (as recited in the presently amended claims). The choice of the wavelengths relative to the wavelength transmission band of the WDM in the claims is chosen in the range of larger and smaller wavelengths compared to the transmitted wavelengths. *Yamane* however, discloses an amplifier control, which is designed to compensate for the gain tilt caused by the amplifier itself. The pump lasers are applied in order to pump the amplifier and to cause gain. At the same time *Yamane* has a control loop (see Fig. 15) to provide a constant gain for all channels of the WDM-signal. Accordingly, the amplifier control by *Yamane* controls the gain and the tilt of the amplifier medium. However, the present claims are recited so that the pump lasers are used to regulate the power levels of the WDM-channels. Depending on the selected wavelength or power level of the pump lasers, either an amplification or an attenuation of the WDM-signal spectrum results.

Furthermore, *Yamane* teaches in FIG. 18 to use two pump signals of the wavelengths of 0.98 μm and 1.48 μm for the transmission of 1.53 μm and 1.55 μm signal bands. *Inagaki* teaches in FIG. 6 to use a pump wavelength of 1.57 μm , which is within the transmission band. At the same time, *Inagaki* states, in col. 4, lines 27 to 29, that "by controlling the optical power and wavelength of this control light, the excitation ratio is controlled, thereby controlling gain differences between signals". This means that the pump light in *Inagaki* is used to produce a desired constant gain of the amplifier, or on an atomic level geared to build up the inversion of the Er-atoms of the EDFA.

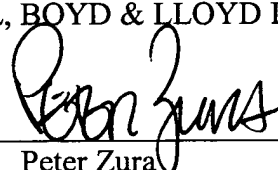
In contrast, the present claims uses the recited pump signal configuration for stimulated Raman scattering (SRS). The claim configuration is referring to in the specification on page 2 line 29 to 36 where the effect of the SRS "is to amplify the signals transmitted in 'longwave' channels at the expense of the signals transmitted in 'shortwave' channels" in other words, energy is added to the damped shortwave "blue" channels by adding "blue" pump light and energy is extracted from the amplified longwave "red" channels by adding "red" pump light (recited as "injecting at least one pump signal and at least one further pump signal . . ." in claim 24 and similarly in claim 45). Under this configuration, the tilt can be controlled by the chosen pump wavelength and the power level can be controlled by the power level of the pump laser. It should also be pointed out that in *Yamane* and in *Inagaki*, the control of tilt and power level at the same time is not possible.

Additionally, the other cited prior art does not cure the deficiencies of *Yamane et al.* and *Inagaki* discussed above. In light of the foregoing comments, the Applicant respectfully submits that claims 24 and 45, and all claims that are dependent therefrom, are allowable over the prior art of record and requests that the rejection be withdrawn, accordingly. The Applicant respectfully submits that the application is in condition for allowance and requests a timely Notice of Allowance be issued in this case.

Respectfully submitted,

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